

REMARKS

CLAIM AMENDMENTS AND STATUS

Original claims 1-16 were presented for examination. Claim 1 has been amended above to include the limitations of claims 3, 4 and 14, which have been canceled. Claim 2 also has been canceled. The dependency of claims 6, 10, 11 and 15 has been revised accordingly. Claims 1, 5-13, 15 and 16 are therefore presented for reconsideration.

THE REJECTIONS

Claims 1-4, 6-9 and 12-16 were rejected under 35 U.S.C. §103(a) as unpatentable over Azima (US 6,342,831) in view of Louis (US 5,212,473). Claim 5 was rejected over Azima in view of Louis, further in view of Rutten (US 5,561,278). Claims 10 and 11 were rejected over Azima in view of Louis, further in view of Simon (US 6,002,392). These rejections are respectfully traversed for at least the following reasons.

Claim 1 is now directed to apparatus comprising a bending wave panel loudspeaker where a single transducer provides both acoustic output and force feedback to a touch-sensitive input device. The force feedback is in the form of pulses to the panel, the pulses being in the form of a transient spike signal to provide “button click sensation” tactile feedback. The prior art references do not disclose or suggest such an arrangement.

What is required in the present application, for user tactile feedback, is a single impulse of suitable spectrum and appropriate moderate magnitude which models, or is equivalent to, the fingertip click forces and sensation that occurs when pressing an electronic button. The bending wave speaker of the invention is capable when so enabled of providing this mechanical output as part of its designed operating frequency range.

Azima discloses an electronic apparatus having a bending wave panel loudspeaker with one or more touch-sensitive areas that respond to user contact. The rejection acknowledges that Azima does not disclose means for providing force feedback to give the user a tactile, button click sensation. Louis, on the other hand, does provide tactile feedback, but only in the context of the keys of a “membrane” keyboard. If Louis’s membrane

keyboard were somehow added to Azima's loudspeaker, the result would not meet the limitations of claim 1.

In Louis's membrane keyboard, each key has its own piezoelectric actuator for producing a tactile response. See col. 5, line 66 through col. 6, line 47. This arrangement would not meet claim 1, which requires that *the same transducer* excite bending waves in the panel to provide an acoustic output *and* provide force feedback to the input device.

The rejection dismisses this difference as an obvious "design engineering choice" or an obvious "change in size/proportion." Office Action, at p.2. However, such a change would be counterintuitive. The very fact that Louis has an individual actuator for each key suggests that very *localized* tactile feedback is required, i.e., feedback that is immediately associated with each key. The same suggestion can be gleaned, e.g., from Rutten, whose membrane switches also have individual elements that provide tactile feedback. Accordingly, providing tactile feedback generally into the bending wave panel as a whole (using the same transducer that excites the panel acoustically) would not have been obvious to one of ordinary skill in the art.

The combination of Azima and Louis also would not meet claim 1 in that it would not provide "a transient spike signal whereby a button click sensation is provided." Louis uses a "pulse generator" (72 or 168) to provide a tactile response, but the tactile response is not described as providing a "click" sensation.

CONCLUSION

For the foregoing reasons, Applicant respectfully submits that the application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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